



NTSB National Transportation Safety Board

NTSB General Aviation Focus

17th Annual General
Aviation Air Safety
Investigator Technical
Workshop

September 26, 2012

Earl F. Weener, Ph.D.
Board Member

NTSB “Air Force”

- Built/Restored or Building/Restoring*
- **Sheryl Chappell:** Cessna 180 Floatplane
- **John Clark (EAA #603773):** Schreder RS-15, Vans RV-9A, Vans RV-12
- **Paul Cox:** Beech Bonanza G33, Vans RV-8a (Building)
- **Dennis Crider (EAA #1041658):** Vans RV-12
- **Dennis Diaz (EAA #1047382):** Vans RV-7a
- **Craig Hatch (EAA #659495):** Vans RV-8a, Cessna 140
- **Tom Haueter (EAA #251921):** 1943 Stearman, 1934 Lockheed Altair
- **Tim LeBaron (EAA #454270):** Piper J-3, Breezy (experimental), Pober Jr. Ace, 1941 Piper J5A, 1946 Cessna 120, 1975 Cessna 150, 1946 Ercoupe, Vans RV-4, 1947 Piper PA-11 Cub Special
- **Larry Lewis (EAA #751909):** Varga Kachina 2150A, Vans RV-8
- **Ron Price:** 1972 McCollough J2, Long EZ
- **Elliott Simpson:** Vans RV-7, Pietenpol Aircamper
- **Bob Swaim (EAA #221919):** 1974 Beech Sport, 1947 Cessna 140, 1967 Cessna 150, 1941 Stinson 10A, Kitfox
- * At least one airplane listed was built/restored or is in the process of being built/restored.

NTSB “Air Force”

- Own (Not Built/Restored)
- **Member Earl Weener (EAA #727429):** Beech Bonanza B36TC
- **Kurt Anderson:** Navion, Aeronca 11AC, Cessna 170A
- **Tim Burtch (EAA #1078661):** Cessna 172
- **John Brannen:** Sonerai IIL
- **Evan Byrne:** Cessna 172
- **Jill Demko:** PA-22-108 Piper Colt
- **J. Michael Duncan:** Beech Bonanza V35B
- **Kristi Dunks (EAA #689578):** 1955 Piper Super Cub
- **Catherine Gagne (EAA #646357):** 1956 Beech Bonanza G35
- **Craig Hatch:** Cessna 170a
- **Mike Huhn:** Cessna 182
- **Judge William Mullins:** Vans RV-8a
- **Jose Obregon:** Cessna 172
- **Jim Ritter:** Piper Comanche
- **Chris Stephens (EAA #689593):** Piper Comanche

All GA Accidents (Part 91)

■ Total ■ Fatal



NTSB

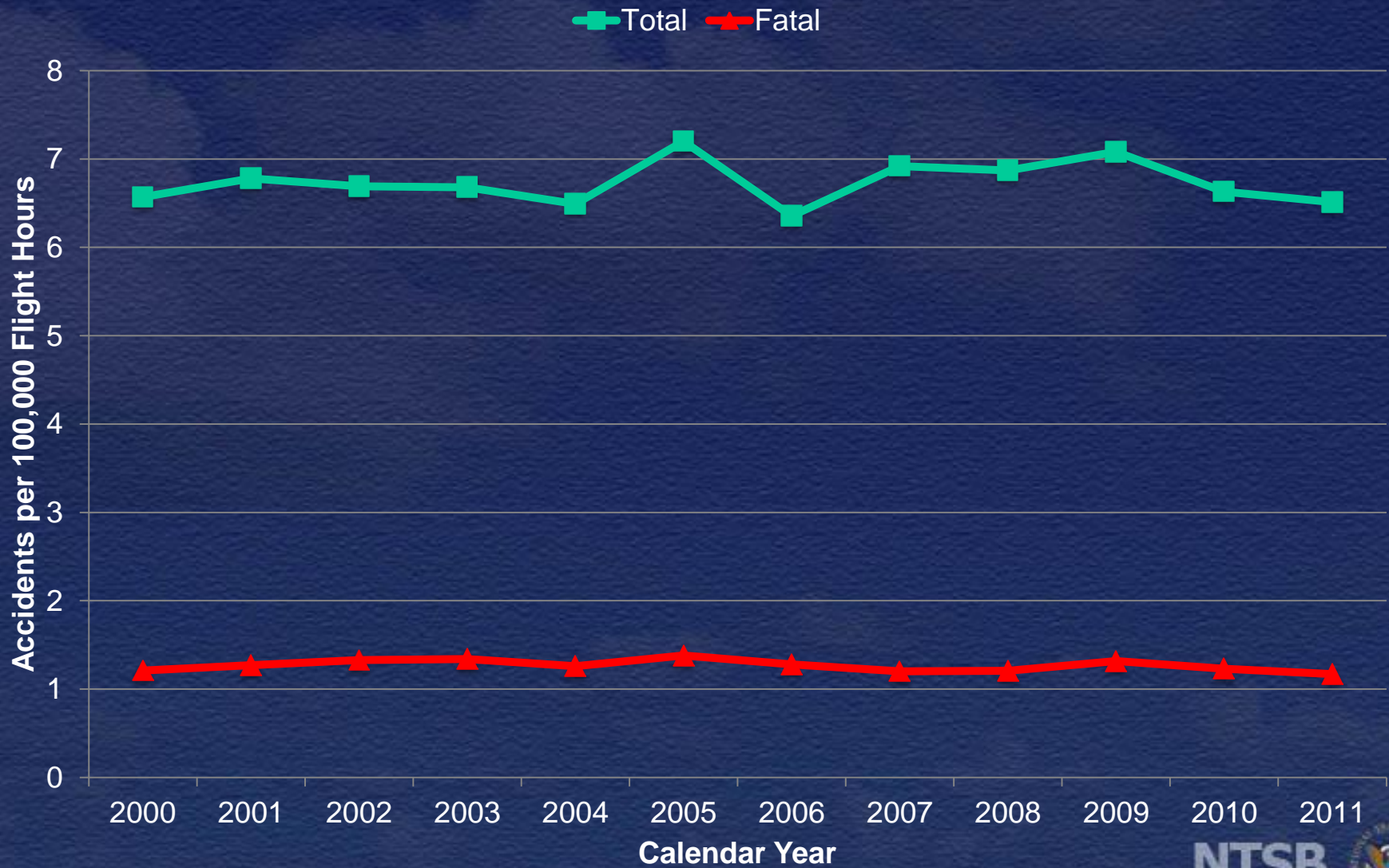


GA Accident-involved Fatalities

GA Accident-Involved Fatalities



GA Accident Rates

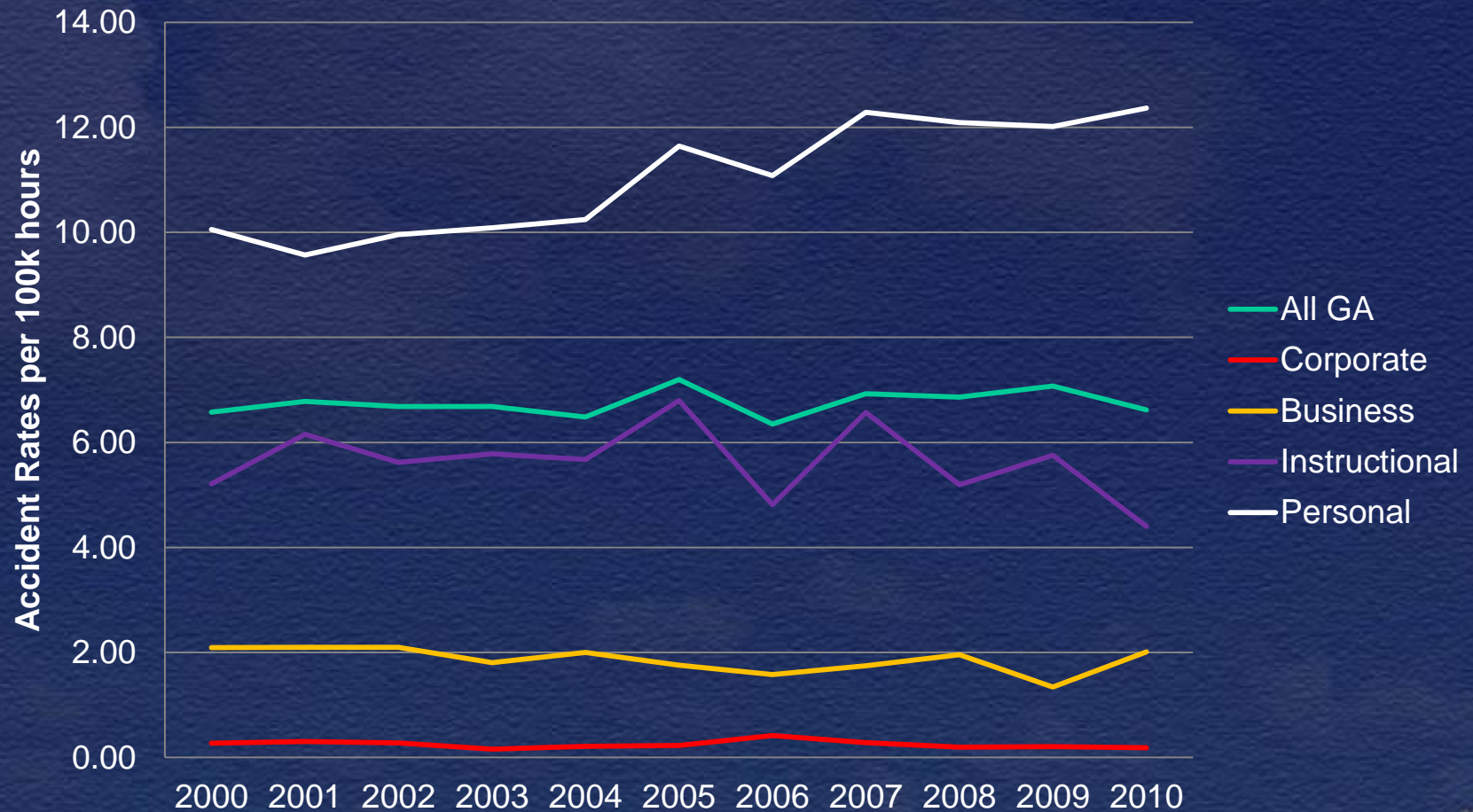


Defining Fatal Accident Events

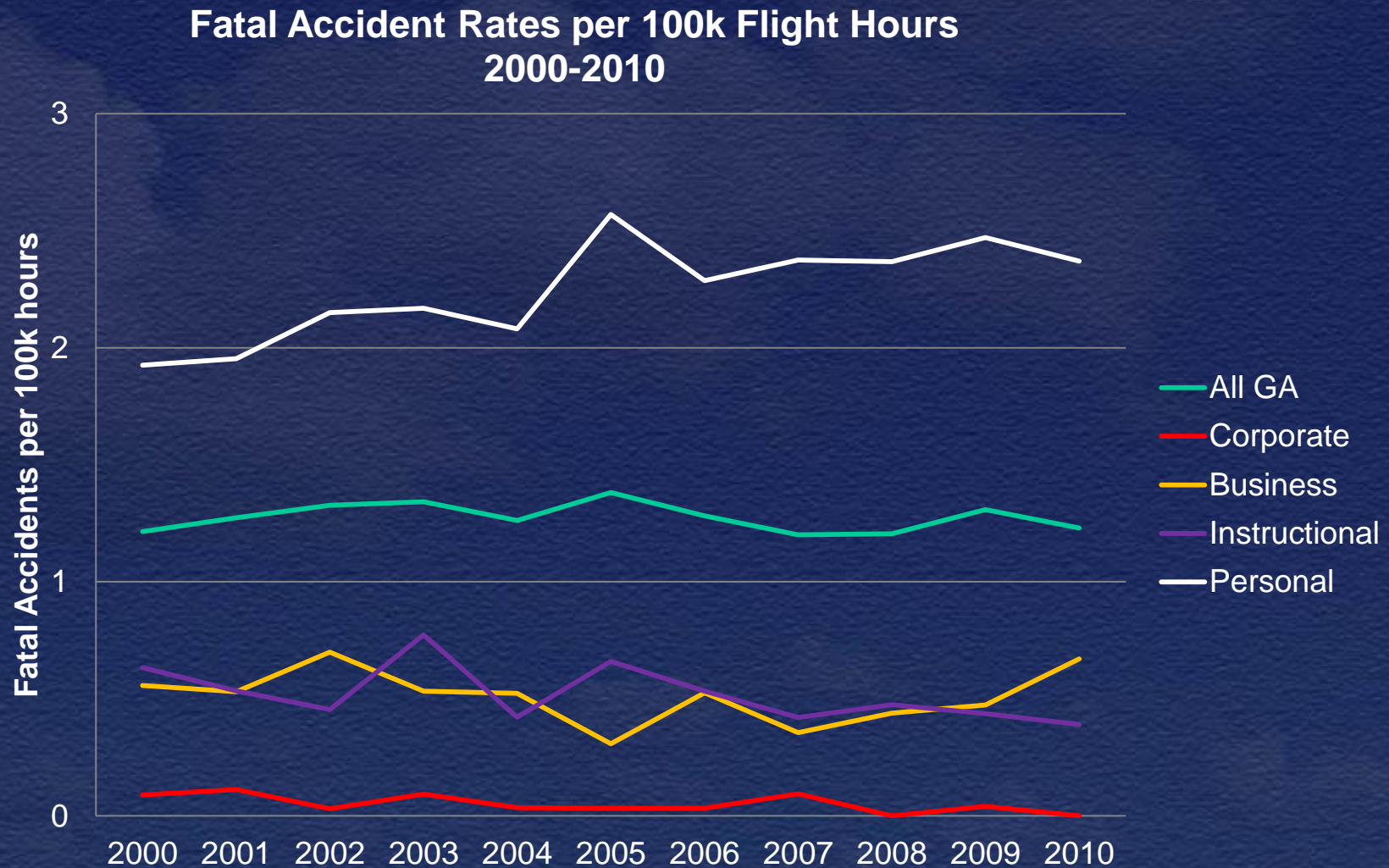
- Loss of Control in Flight
- Loss of Control on Ground
- Abnormal Runway Contact
- System/Component Failure – Powerplant
- Controlled Flight into Terrain
- Unintended Flight into IMC

Accident Rates per 100k Flight Hours

Accident Rates per 100k Flight Hours
2000-2010



Fatal Accident Rates per 100k Flight Hours



Business Flying, 2007-2009

All accidents – Loss of control (in-flight or on the ground) accounted for the largest portion, followed by system/component failures.

Fatal accidents - Loss of control in-flight, followed by controlled flight into terrain, CFIT.

Number of Fatal Accidents

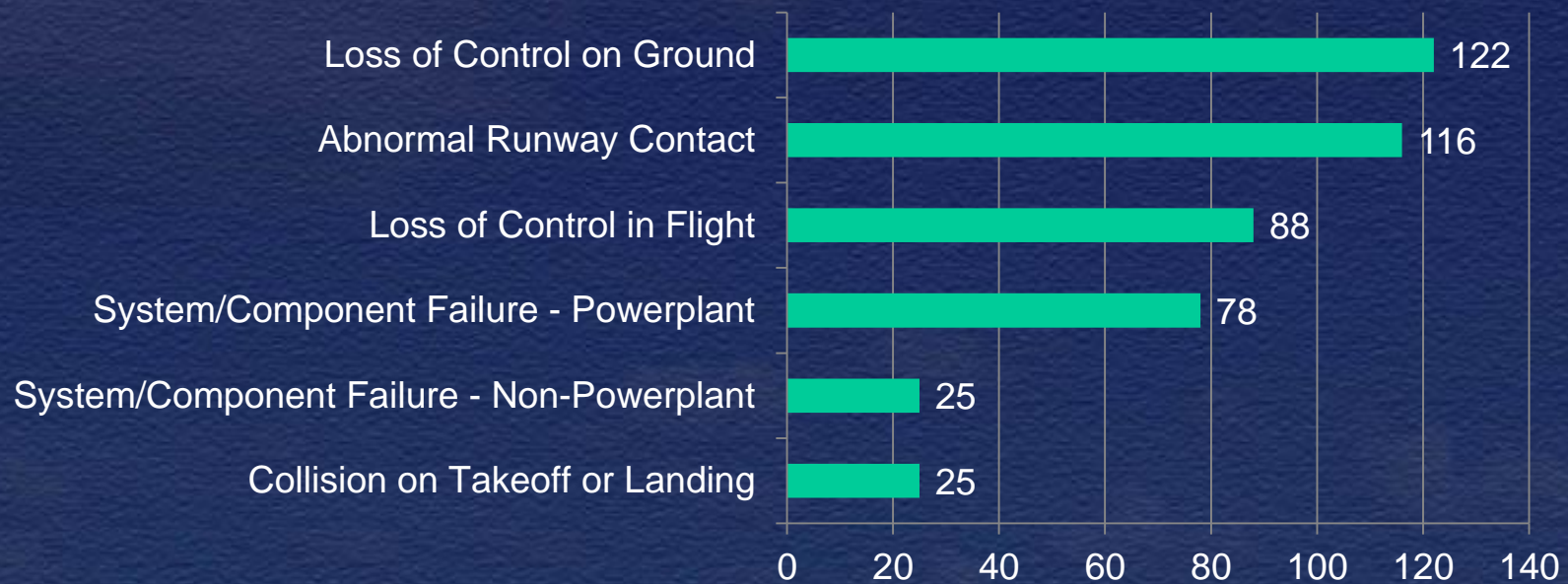


Instructional Flying, 2007-2009

All Accidents - Loss of control on the ground or in-flight and abnormal runway contact accounted for the great majority of defining accident events.

Fatal Accidents – Loss of Control on Ground, followed by Abnormal Runway Contact

Number of Fatal Accidents

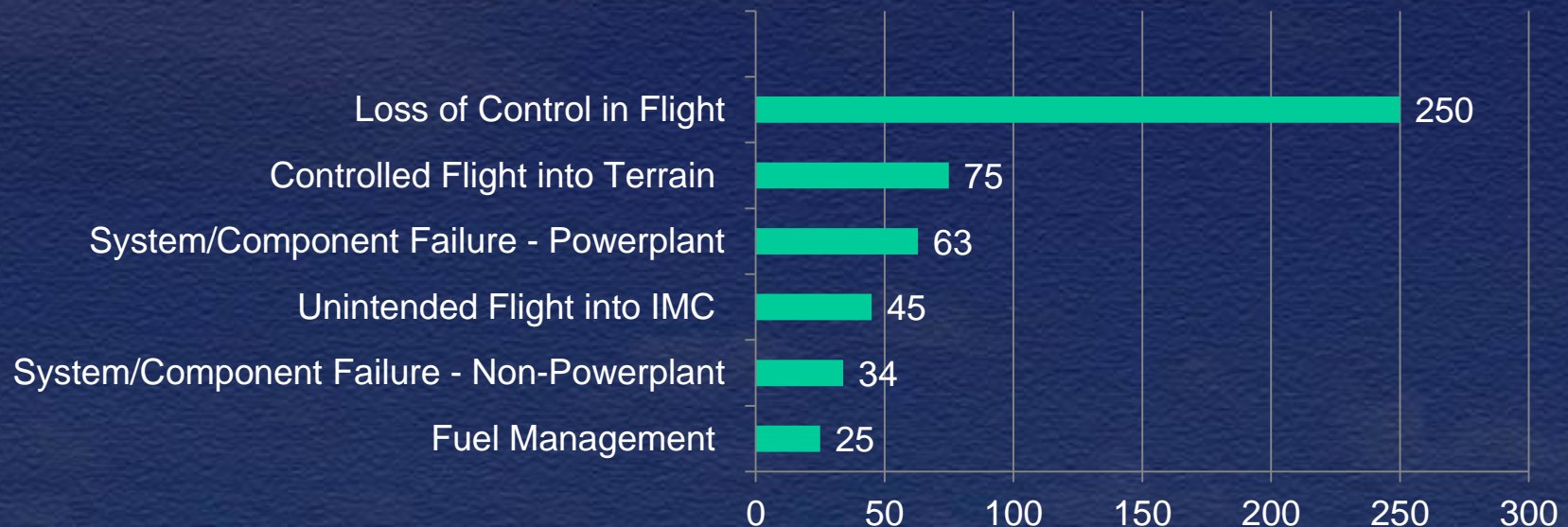


Personal Flying, 2007-2009

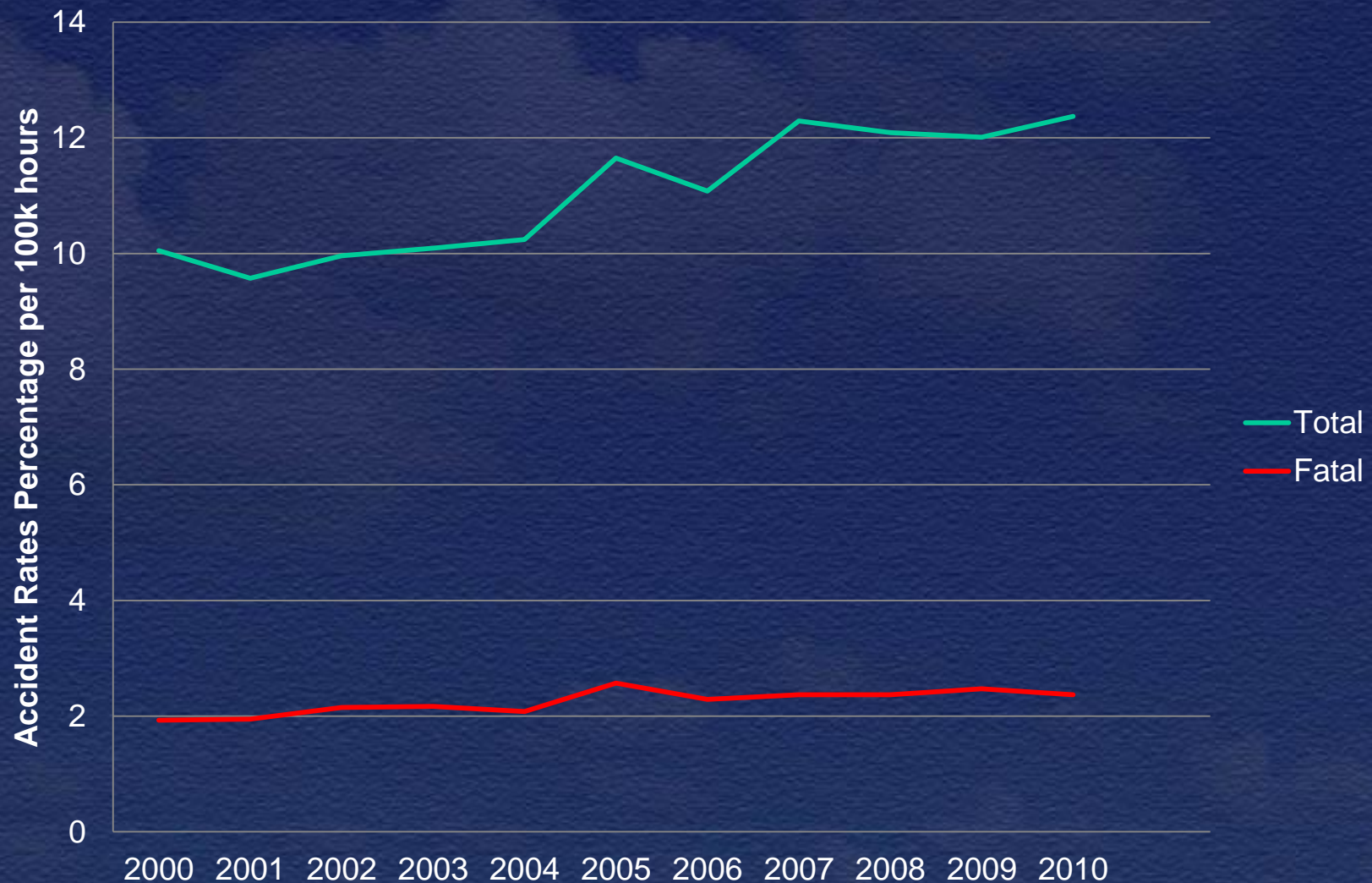
Total accidents - loss of control in flight and on the ground and power plant failure were the most common defining events.

Fatal Accidents - Loss of control in flight, followed by CFIT.

Number of Fatal Accidents



Personal Flying Accident Rates



NTSB Outreach

- NTSB Most Wanted List
- EAA AirVenture - Oshkosh 2011
- EAA AirVenture - Oshkosh 2012
- Sun 'n Fun 2012
- GA JSC Participation
- EAA Sport Aviation Magazine Article on NTSB
- AirVenture - Association Presidents Meeting 2011 & 2012
- Forum - GA Safety – Climbing to the Next Level
- Forum - GA Search & Rescue
- Experimental Amateur Built Safety Study

Take safety messages to pilots and industry

Most Wanted List



10 issue areas

Reviewed annually

Objective – bring focus
on need for
improvements

NTSB Most Wanted List

- General Aviation Safety
- Runway Safety
- Bus Occupant Safety
- Safety Management Systems
- Recorders
- Teen Driver Safety
- Human Fatigue
- Alcohol-Impaired Driving
- Motorcycle Safety
- Pilot and Air Traffic Controller Professionalism



Why GA on the Most Wanted List?

- NTSB investigates approximately 1500 GA accidents per year
- Overall GA accident rate flat
 - Has not improved over the last ten years
 - Air carrier accident rate decreased almost 80%
- Personal flying accident rate
 - Increased 20% over last 10 years
 - Fatal rate increased 25% over that period
- **GA Personal flying safety needs attention**



GENERAL AVIATION SAFETY

Climbing to the Next Level

June 19-20, 2012

Safety Forum Agenda

- **Panel 1 – Safety Priorities**
 - NASA, GA-JSC, FAA
- **Panel 2 – Safety Programs**
 - ABS, AVEMCO Insurance, AOPA, FAA (Wings Program)
- **Panel 3 – Role of the Flight Instructor**
 - SAFE, NAFI, FAA, UND, IAFTP
- **Panel 4 – Content, Quality & Consistency of Pilot Training**
 - FAA, ASA, Red Bird Simulators, SAFE, ERAU

Safety Forum Agenda (cont'd)

- **Panel 5 – Weather Related Decision-Making**
 - FAA, Baron Services, ERAU, CAMI, Independent Aviation Safety Speaker, FAA
- **Panel 6 – Aircraft Maintenance and Modification**
 - FAA, EAA/VAA, Middle TSU, PAMA
- **Panel 7 – New Aircraft Design and Certification**
 - FAA, GAMA, Cirrus, AOPA, ICON Aircraft
- **Panel 8 – Advanced Avionics and Handhelds**
 - GAMA, AOPA, NASA, ERAU



GENERAL AVIATION
SEARCH AND RESCUE
FORUM
JULY 17-18, 2012

SAR Forum Agenda

- **Panel 1 – National SAR System Overview**
 - NOAA, NSARC, USCG
- **Panel 2 – National SAR Policy**
 - FAA, FCC, AOPA
- **Panel 3 – Operational Issues**
 - FAA, AFRCC, CAP, State SAR Coordinators Council

SAR Forum Agenda (cont'd)

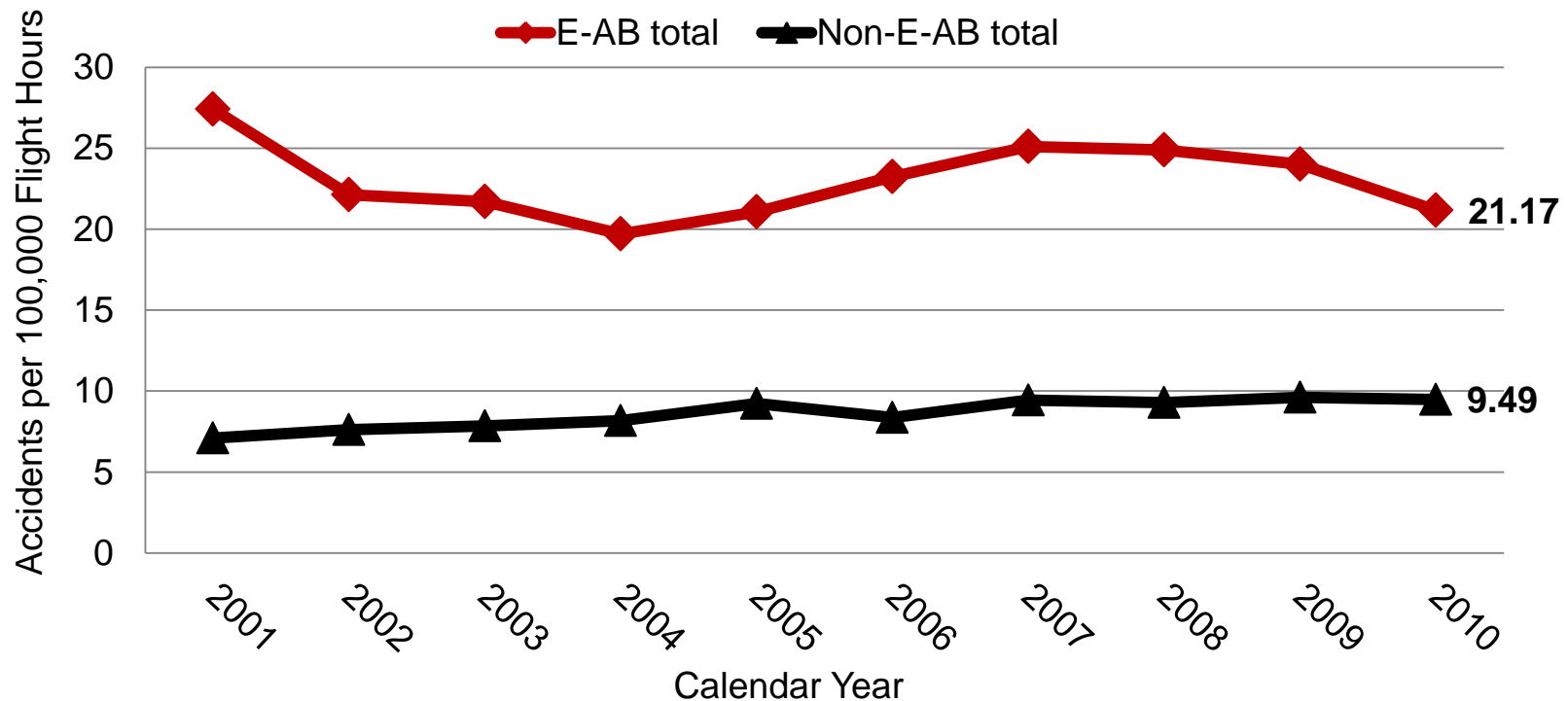
- **Panel 4 – Technical Issues**
 - AEA, FCC, ACR Electronics, EBC, ACK, FAA
- **Panel 5 – Emerging Technologies**
 - RTCM, DeLorme, Globalstar, Spidertracks, FAA, USFS, CTIA
- **Panel 6 – The Future of GA SAR**
 - USAF, USCG, Equipped to Survive Foundation, AFRCC

Special Study

The Safety of Experimental Amateur-Built Aircraft (E-AB)

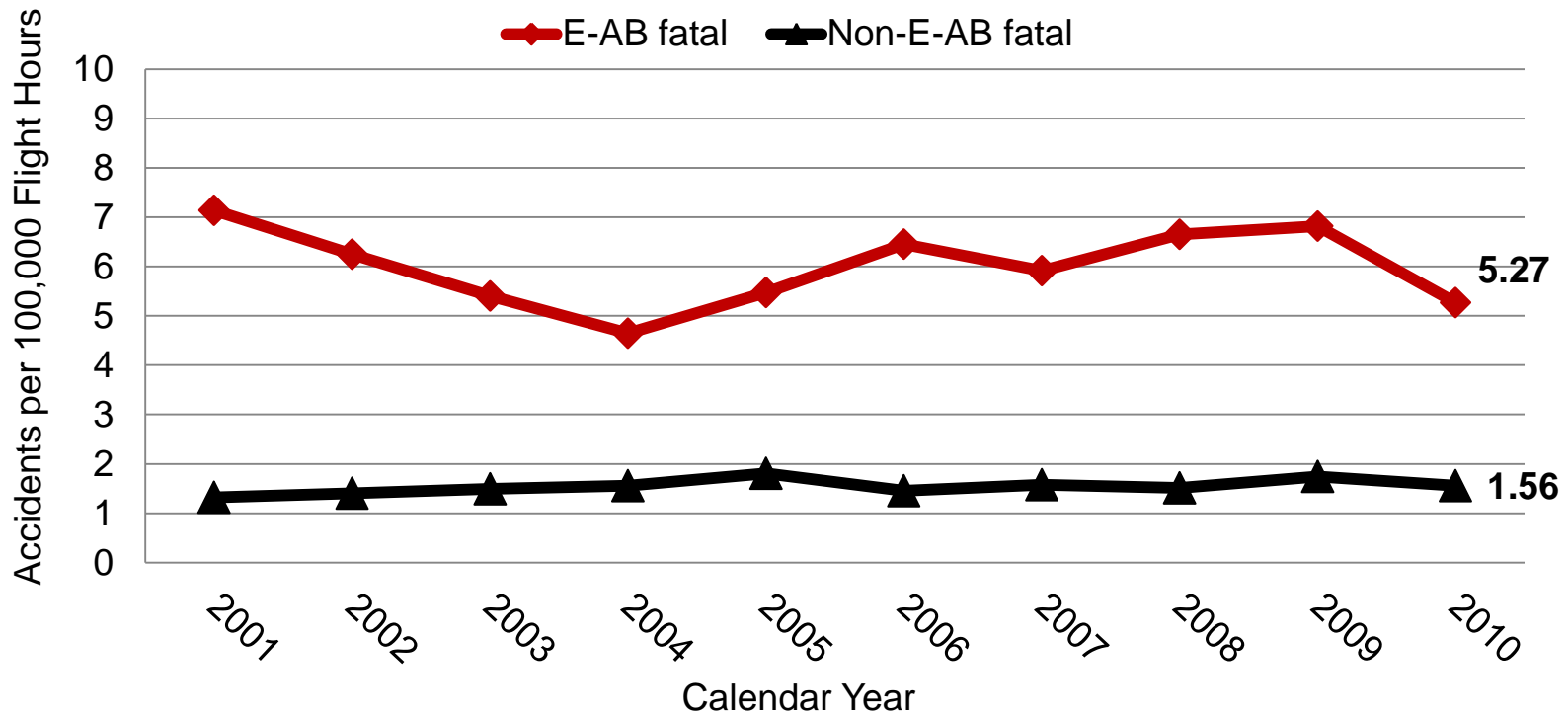
Accident rates of E-AB aircraft

Accident Rate per 100,000 Flight Hours, 2001-2010



Accident rates of E-AB aircraft

Fatal Accident Rates per 100,000 Flight Hours, 2001-2010



E-AB Kits



Quick-Build Kit



Standard Kit

The Research Questions

- What are the circumstances and causes of E-AB accidents?
- What are the characteristics of the population of E-AB builders, pilots and aircraft?
- Are There Ways to Mitigate the E-AB Accident Risk?

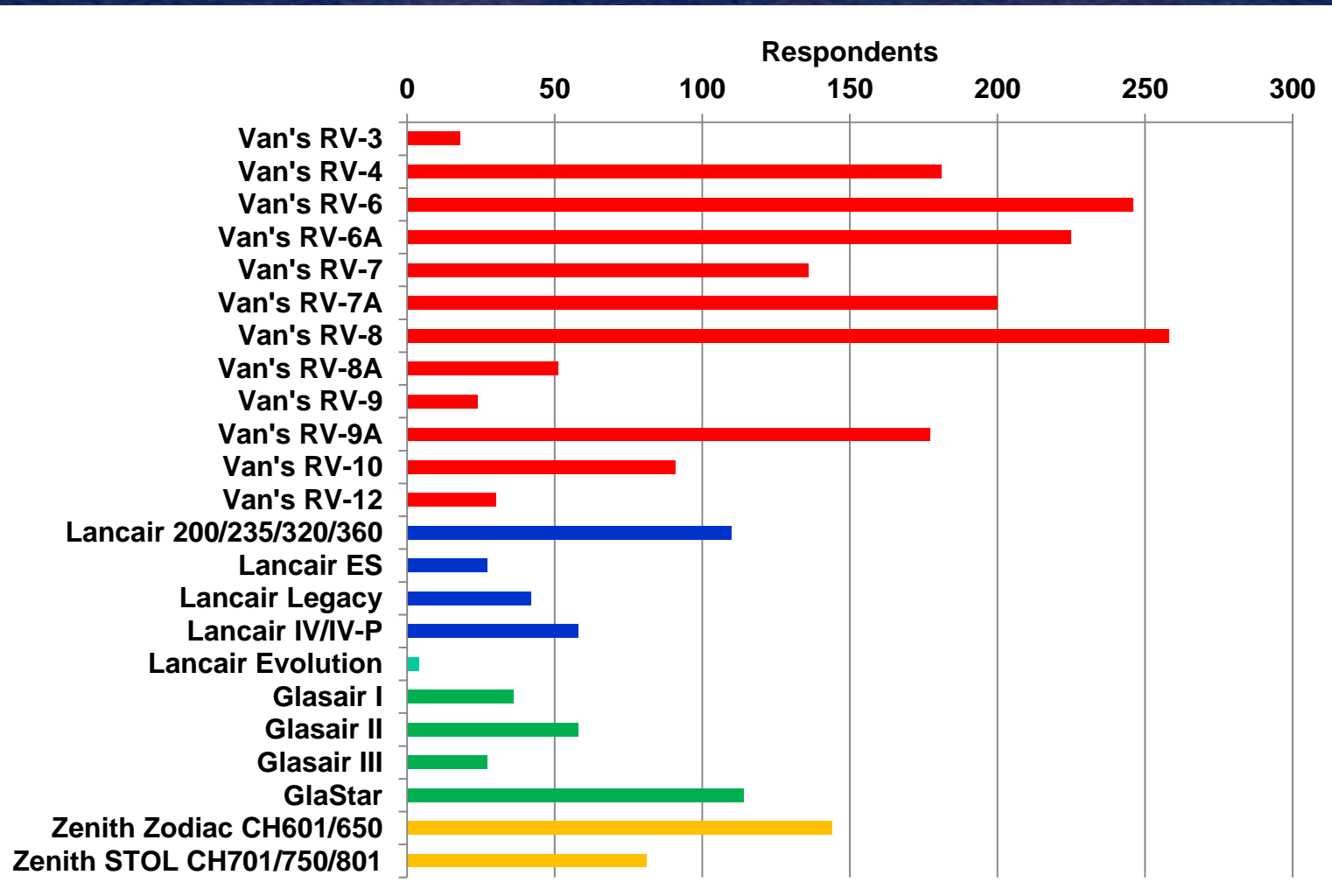
The Data Sources

- Retrospective E-AB & Non-EAB Accident and Exposure Data: 2001 – 2010
- Prospective In-Depth Accident Data: 2011
- The EAA Survey of E-AB Owners and Builders: 2011
- Interviews/discussions with EAA officials, FAA officials, manufacturers, type clubs, and builders.

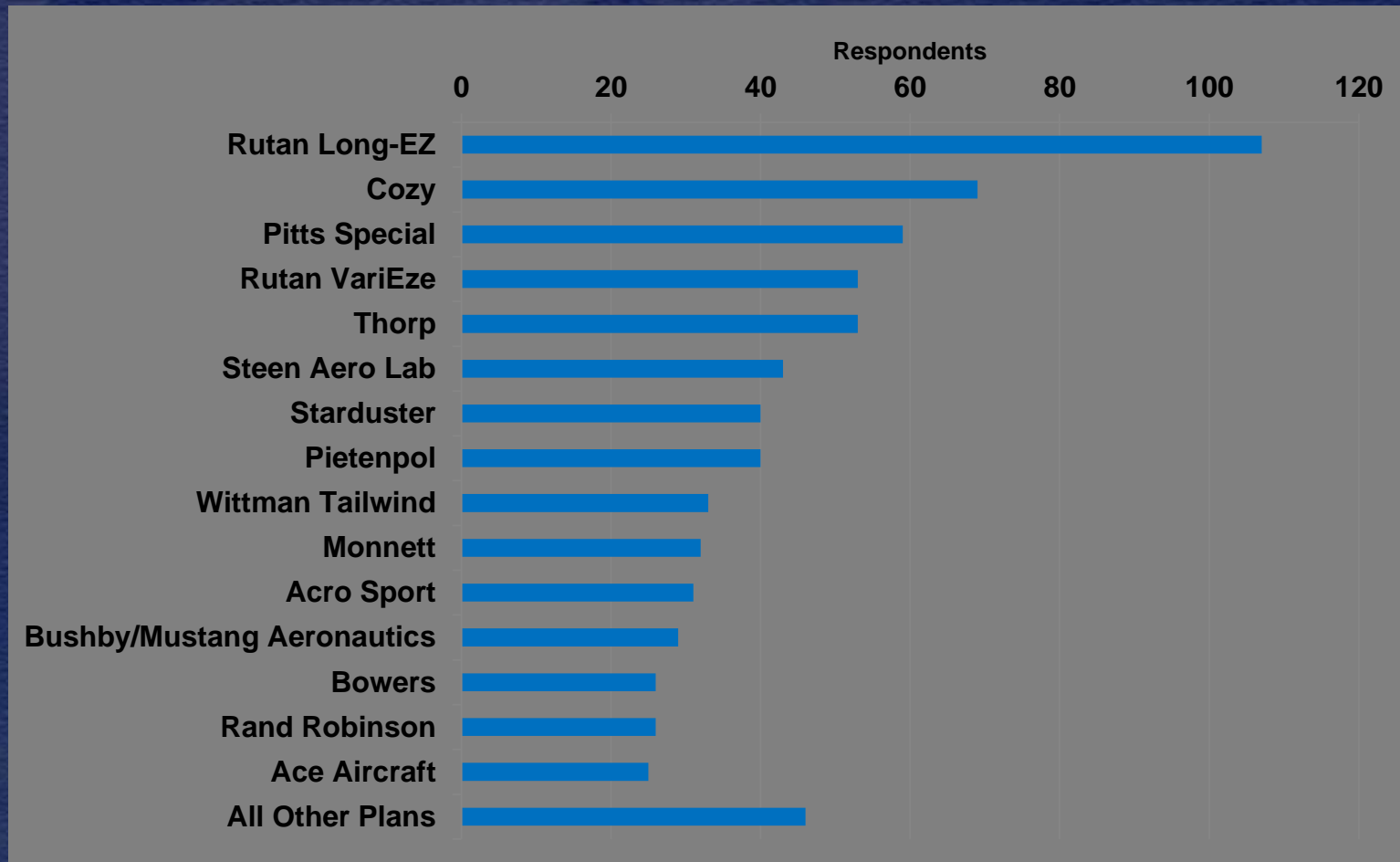
The Major Issues Identified

- Accidents Early in the Life of the Aircraft and on the First Flight
- Power-Plant Failures and Loss of Control In Flight
- Aircraft Registry and Accident Records

Most Frequent Kit Makes and Models



“Makes” of Plans-Built Aircraft



E-AB Aircraft Accidents During 2011

- Most accident aircraft were airplanes
 - 212 airplanes, 2 gliders
 - 4 helicopters, 9 gyroplanes
- Most were built from kits
 - 166 kit-built, 58 plans-built,
 - 3 original design

2011 Similar to Previous Decade

- Powerplant failures and loss of control in flight most common occurrences
- Loss of control most common fatal accident occurrence

Detailed Analysis of 2011 Accidents

- 34 accident aircraft were in Phase I flight testing
- 125 of the 227 accident aircraft were purchased used (55%)



First Flight Accidents - 2011

- 10 of 102 accidents in newly-built aircraft occurred during the first flight
- 14 of 125 accidents in used aircraft occurred during first flight after being purchased



NTSB